PART- 5: CONCLUSION
It can be concluded from the present investigation that manual material handling in the organized as well as in the unorganized sectors is hazardous from the occupational health and safety point of view. These rigorous tasks are performed in awkward postures at incredibly high frequencies throughout the day resulting in the occurrence of different types of incidence, accidents and injuries. Such injuries when aggravated result in the permanent injury, illness, property damage and even death also. The findings of this thesis are in corroboration with a report of NIOSH (1997)\textsuperscript{179}. They also explained the correlation between back injuries and occupational risk factors and concluded that the primary risk factors responsible for low back injuries are: a) very heavy physical work requiring high energy demand; b) lifting and forceful movements; and c) bending and twisting or awkward posture. It has already been discussed in the thesis that all the above risk factors are an integral part of the regular heavy load handling performed by the workers. Moreover handling heavy load also might account for the increase in sprain injury if postural balance is lost at any instance during activity. From the questionnaire analysis it is also revealed that the work related discomfort feeling or pain due to injuries and accidents not only persisted throughout the entire day of work but also sometimes hampered sleep at night.

Moreover the workers involved in MMH are exposed to high level of physiological stress as evident from the elevated heart rates measured after their activity. These findings are supported by Bridger (2003)\textsuperscript{180} who reported that fatigue is usually responsible for decline in physical and physiological performance.
The present study also revealed that the work environmental conditions are not fit for this kind of heavy work. For that purpose the work environmental conditions like thermal, level of illumination, noise level for each work places were studied. It was revealed that the thermal condition is hot and humid throughout the year in most work places. On the other hand level of illumination was not effective in all the work places. In unorganized sector workers of every units were repeatedly exposed to the inside and outside of their work area, as a result the illumination level varies greatly and in most of the cases the areas are poorly illuminated. This condition prevails throughout the year but in the rainy season it becomes much lower. As a result workers have to adopt the rapid change in illumination level and accidents occur when this rapid change repeated faster. All units of unorganized sector like central market area, brick field, railway porters, hand cart pullers the workers have to face quite same consequences at work.

In the organized sector the conditions are much more severe. The level of illumination is well below the recommended level. Workers of different organized sector work in their respective work places and in most of the cases they use to spend a major period of time under a factory shade at work. It is revealed that heavy engineering industry workers are bound to work under their factory shade where the natural illumination system is not sufficient and also artificial illumination systems are inadequate, as a result injuries and accidents occurs. In the steel mills the condition are much worse. In jute mills the conditions are much more awful and resulting in different types of injuries and accidents. On the other hand the conditions of construction industry are supposed to be better because they are exposed mostly in the open area under the natural illumination but in the store room and also in front of the machine area the illumination level is poor than the recommended value as a result at the time of cement bag carrying the accident occurs resulting in injuries.

The noise levels at the different workplaces of unorganized and organized sectors are studied. It was found that the workers of both the sectors are affected by the noise
generated in the workplace. In most of the cases this kind of noise may distract the worker and accidents and injuries results.

Furthermore from the observation of the working conditions of the different unorganized and organized sectors, it is evident that the workers are compelled to work in a congested work place and in a restricted work area. They also exposed to some workplace hazards, like smoke, dust and fumes evolved at their respective workplaces. All these factors mentioned above when aggregated together increase the misery of these workers to an insurmountable extent.

In the construction industry, to overcome this hazardous condition, the frequency of load handling can be minimized. Furthermore it is suggested that the workstation should be organized in such a manner so that the storeroom of the cement bags and the machine where these bags have to be poured remain adjacent to each other. This will not only diminish the distance that the workers are required to cover with the load overhead but also reduce their workload considerably. Moreover in such an arrangement the time factor can be significantly minimized and as a consequence the overall productivity of the company will be enhanced.

In the steel mill, one of the hazardous postures, that require some sort of correction as soon as possible as indicated by OWAS action categories, has been eliminated by modifying the existing work process. Recommendations like changing the working level or height (to avoid the stooping posture) by using platform have also been made to improve some of the other working postures that need correction as soon as possible or in near future. To obtain the desired increase in productivity a change in the workstation design is needed. In the existing workstation, the distance from the storage site of raw material to the core-making site is found to be too long. So this increased the duration of carrying load resulting in the delay. Moreover they have to perform the same job repeatedly that caused further delay.
A new workstation was designed where a new storage site for storing mixed sand has been selected near the core making area. This results in the reduction of occurrence of accidents and injuries and there is an increase in productivity of core making process by about 30%.

Therefore to conclude the study it can be assumed that the work mode, work behaviour along with different environmental factors effectively contributes to the occurrence of different types of accidents and reduction in the incidence of different types of injuries and accidents among the workers engaged in heavy load handling in the unorganized and organized sectors can be accomplished in a number of ways as shown in this study. However, since it is not possible for the MMH workers in the unorganized sector to leave their jobs because of the poor economic conditions of their family, so adequate precautions can be taken at work by improving the work organization, by modifying the work mode, and by improving some of the environmental factors to decrease the causation of injuries and accidents. The most important of them all is to improve the working postures adopted by the workers during different types of load handling tasks. They should take adequate rest pauses while at work and by using some personal protective device at the time of work these conditions can be improved. This will reduce the early onset of fatigue and development of work related stress - the factors that significantly lead to the causation of injuries and accidents.